



FIG. 1

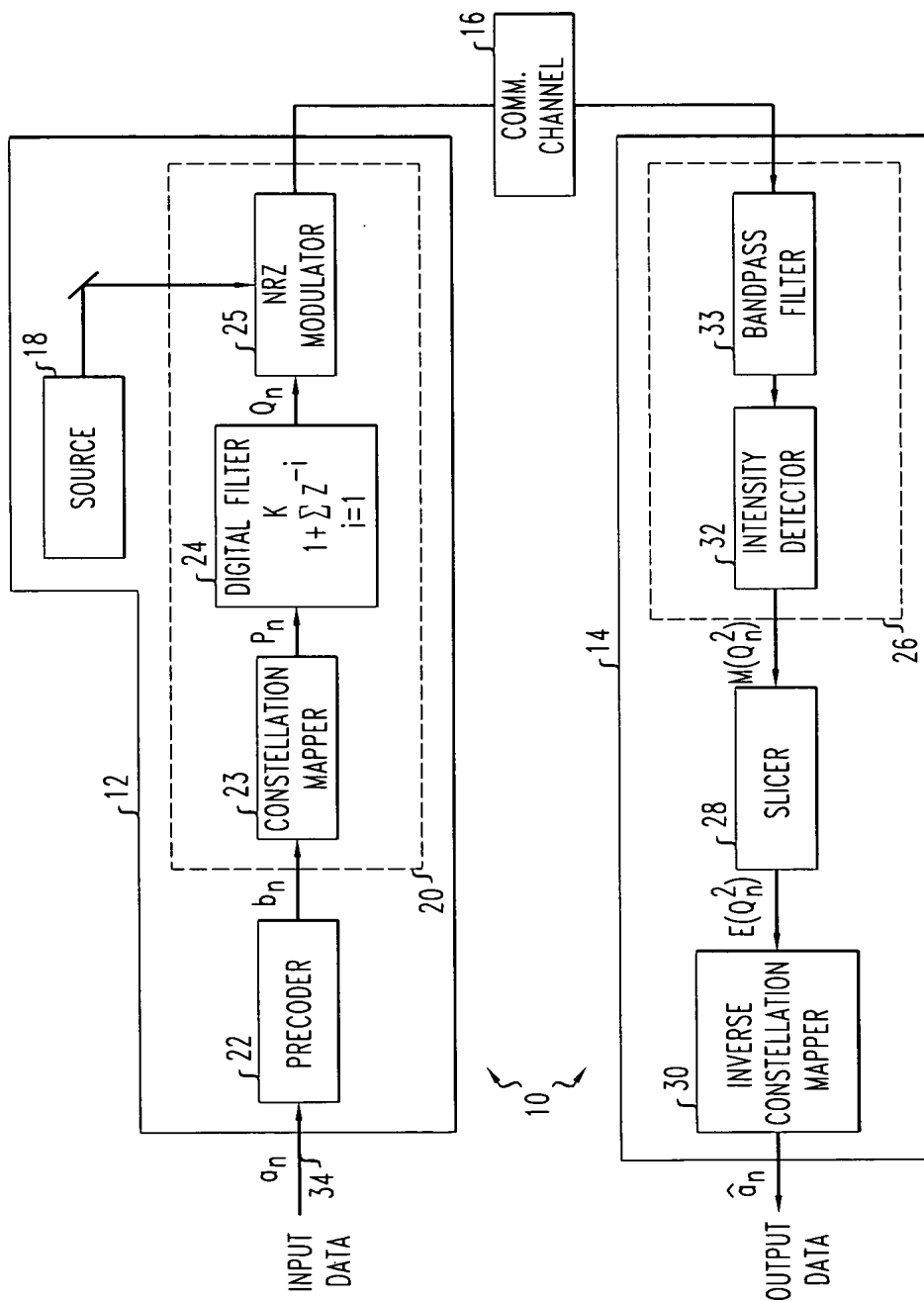




FIG. 2

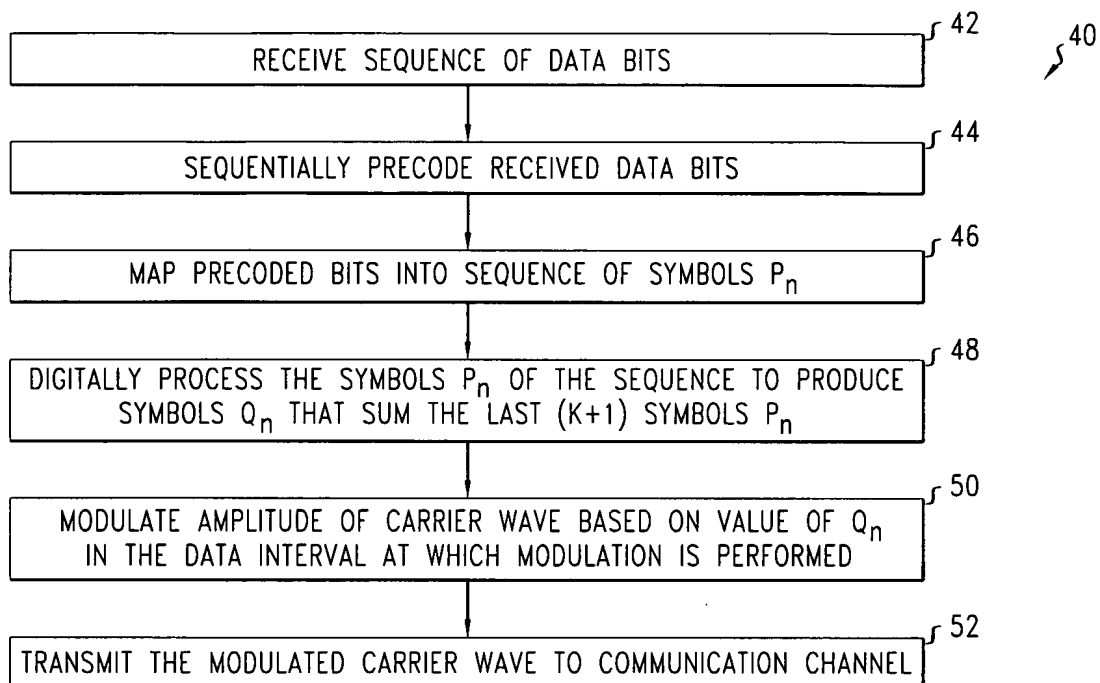




FIG. 3

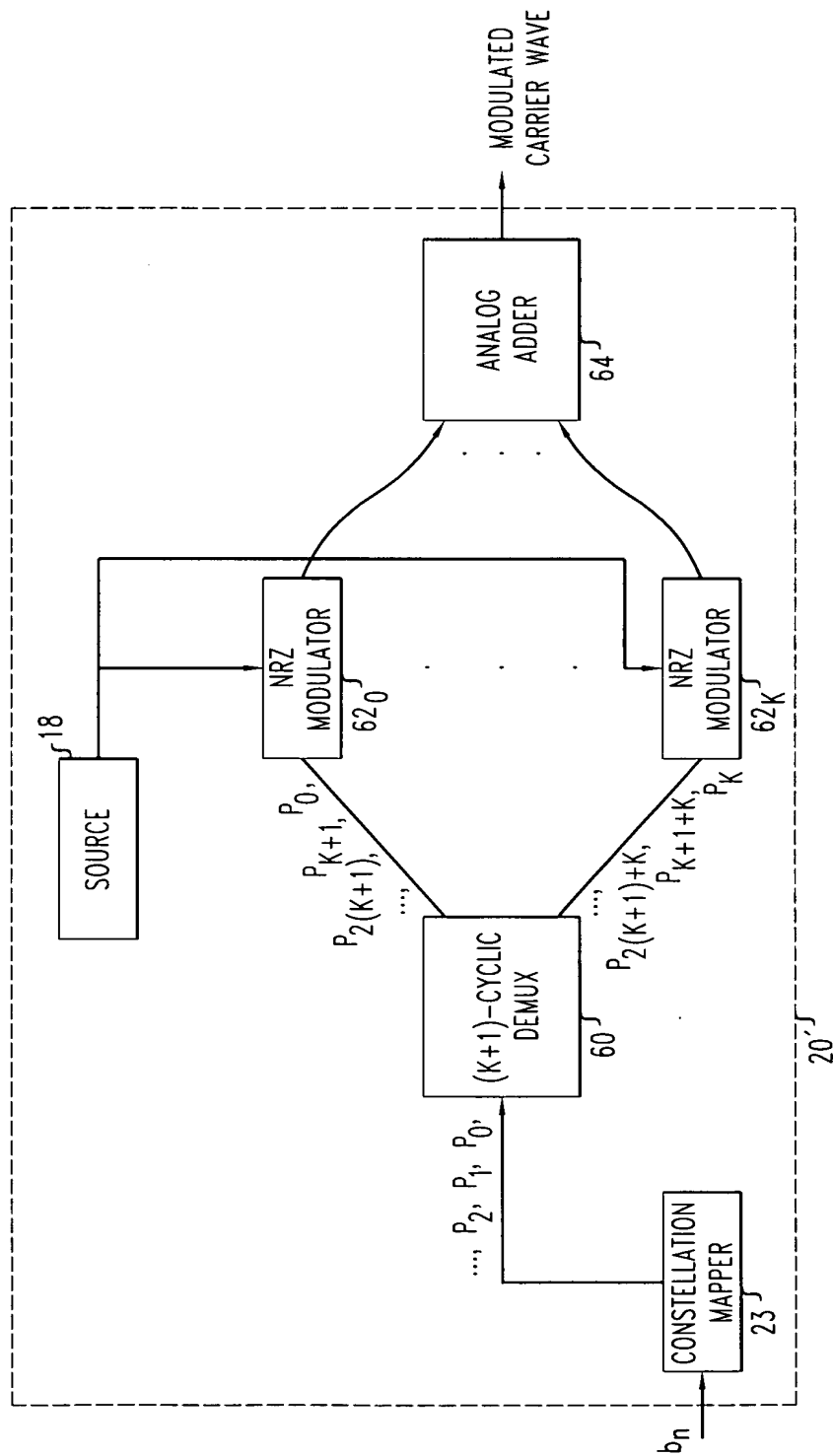
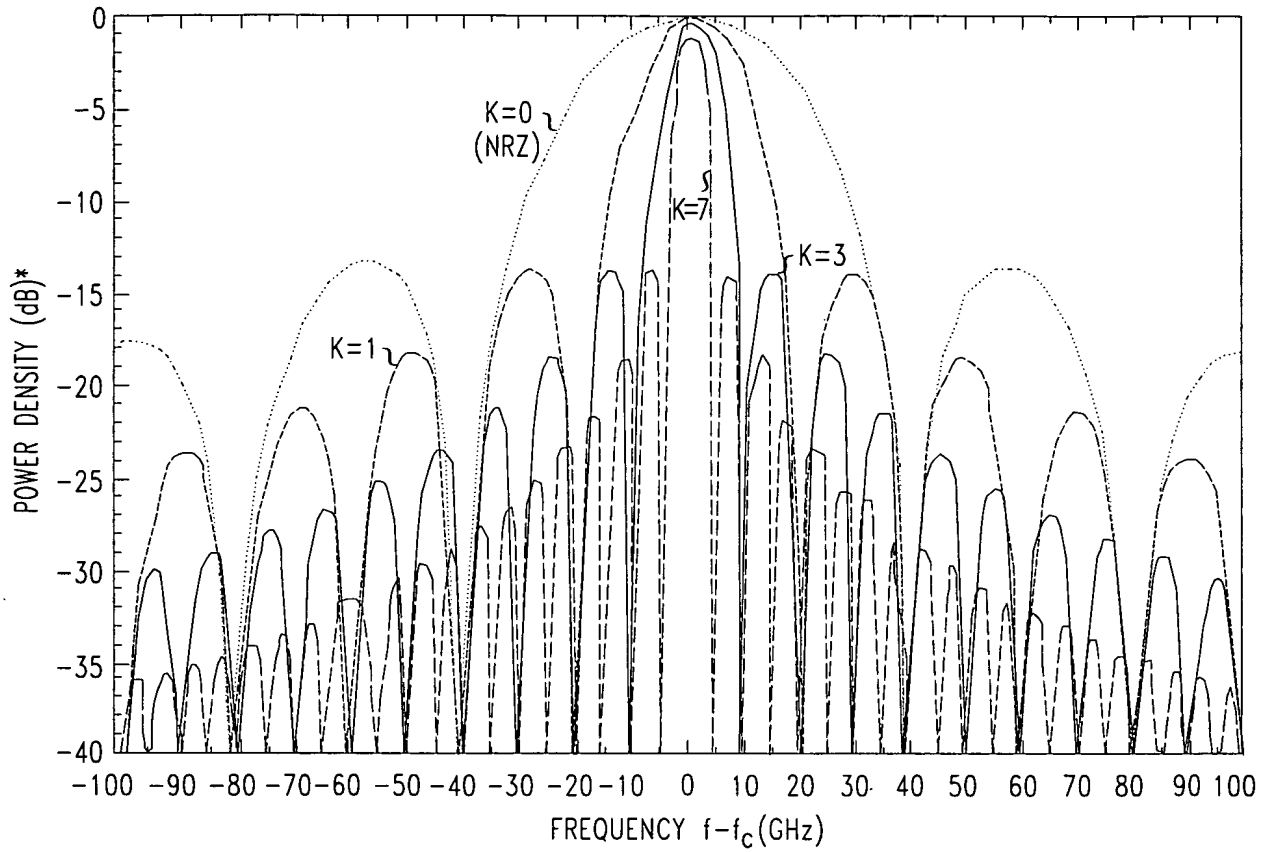


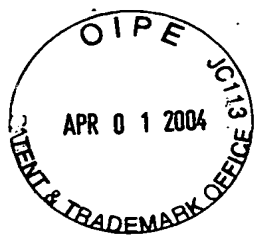


FIG. 4



- NRZ
- $1+Z^{-1}$ (DOUBINARY)
- $1+Z^{-1}+Z^{-2}+Z^{-3}$
- $1+\sum_{i=1}^7 Z^{-i}$

* RELATIVE TO THE DENSITY AT $f=f_c$



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FIG. 5

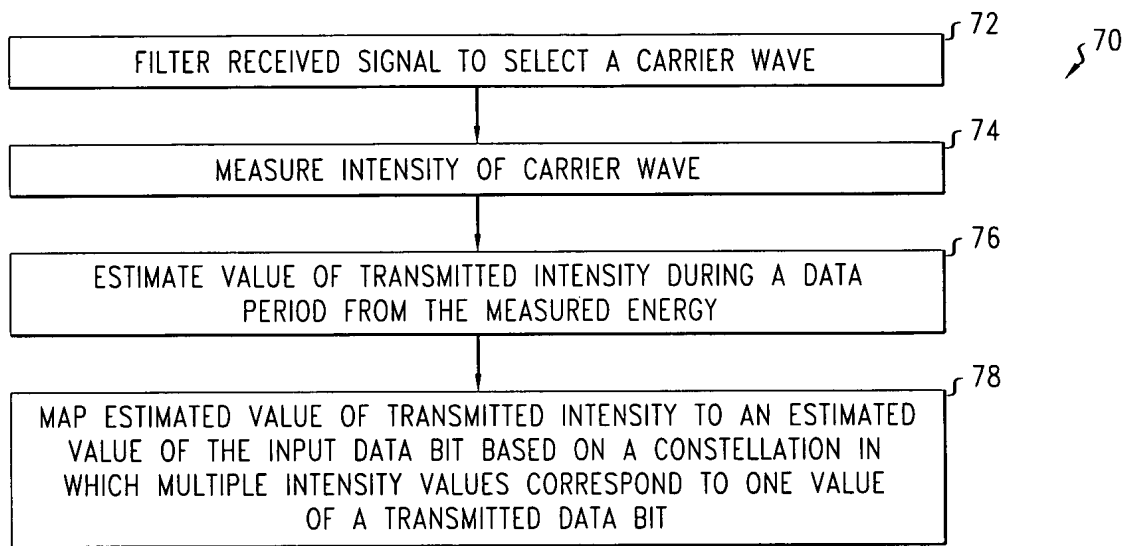
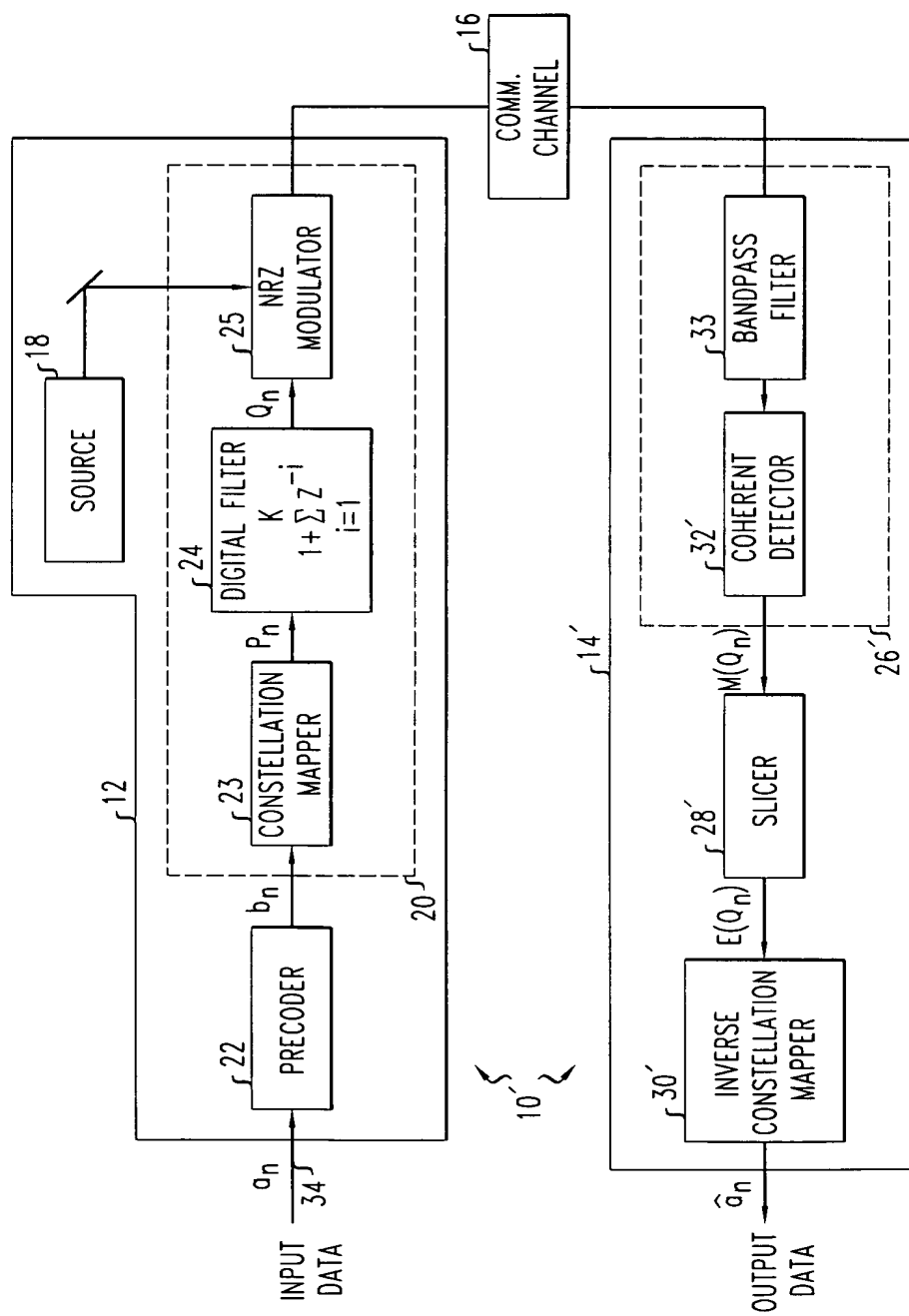




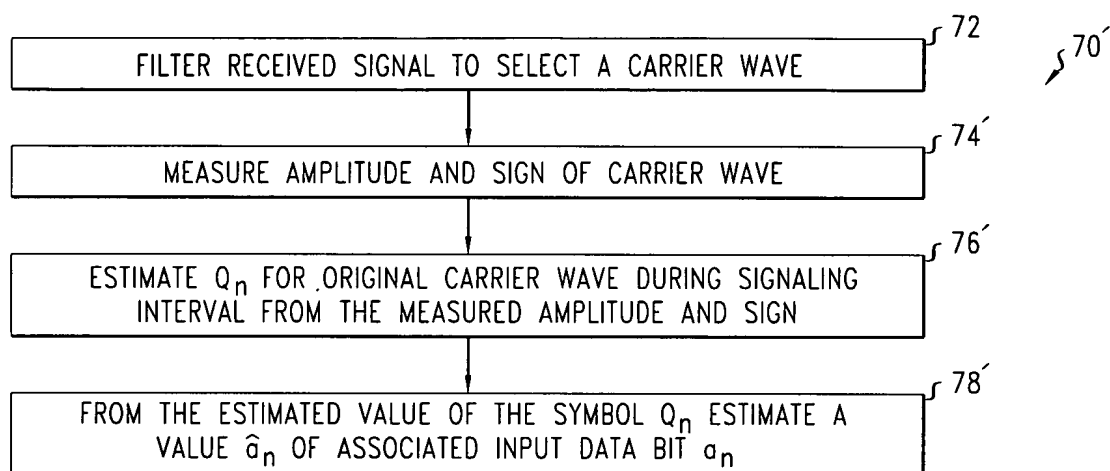
FIG. 6





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FIG. 7



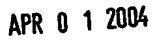


FIG. 8



COMM. CHANNEL



FIG. 9

DIGITAL FILTER	NORMALIZED SIGNAL BANDWIDTH*	LOSS IN RECEIVER SENSITIVITY (dB)*	NUMBER OF TRANSMITTER SIGNAL AMPLITUDES Q_n	NUMBER OF RECEIVER SIGNAL AMPLITUDES Q_n^2
$1 + \sum_{i=1}^1 z^{-i}$ (DUOBINARY)	$\frac{1}{2}$	0	3	2
$1 + z^{-1} + z^{-2} + z^{-3}$	$\frac{1}{4}$	3	5	3
$1 + \sum_{i=1}^5 z^{-i}$	$\frac{1}{6}$	4.8	7	4
$1 + \sum_{i=1}^7 z^{-i}$	$\frac{1}{8}$	6	9	5
\vdots	\vdots	\vdots	\vdots	\vdots
$1 + \sum_{i=1}^{15} z^{-i}$	$\frac{1}{16}$	9	17	9

*RELATIVE TO A BASELINE ON/OFF NRZ MODULATION